

Notes from my herbarium. IV.

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My baby flower press.

I always carry with me on my collecting trips a small press, consisting of two pieces of stiff card-board some six by five inches in size, filled with small blotters and pressing paper which I cut out from my large sheets used in the ordinary press. I use strong rubber elastics round the boards, and the little press can easily go into the pocket. The object of all this is to secure the flowers of many plants in a way almost impossible in the large press. It is most important for a well-furnished herbarium to be able to show the flower in all its details, that the student may have before him, spread out as in a printed diagram, the various parts of the flower, without resorting to boiling and dissection in order to find out the simplest facts as to number of stamens, position of petals, and the like. This my baby press enables me to do.

I am walking along the railroad track on a sunny morning, and I meet a fine specimen of *Lactuca leucophæa* Gray, a species of wild lettuce, its small purple heads of flowers broadly expanded to receive the warmth of the beautiful sun. How quickly those flower-heads will close and wither when the plant is picked! Even if put into the press on the spot, the flowers are apt to close and make a sorry show, for they are small and the stems of the plants prevent their receiving the needed pressure to keep them open. How many herbaria can show the open flowers of such species of the Ligulifloræ as *Lamp-sana communis* L., the nipple-wort, *Krigia Virginica* Willd., the dwarf dandelion, *Sonchus oleraceus* L., the common sow-thistle, and the like? This, however, can easily be done. When collecting the plant, pick off separate flowers and put them into the baby press, and, as you put the paper over them, hold them so that they will press wide open. Nothing is simpler. I find that there is no need of changing the blotters, since the flowers dry just as well without. In the case of such flowers as the fringed gentian, *Gentiana crinita* Froel., I section the corolla and press it open. This shows the appendages at the sinuses, so important a character in this genus.

A complete diagram of a flower is a most interesting feature to display, especially in the case of so curiously constructed a flower as *Sarracenia purpurea* L., the pitcher plant. Remove carefully all the parts, the three bracts, the sepals,

the petals, the umbrella-shaped top of the style with its stigmatic rays, and then make a cross section of the ovary and keep the fringe of stamens on with it. Press all these and either mount them on the sheet or put them in a paper pocket. I use both of these methods in my own herbarium. If the separate flowers belong to the same plant on the sheet with them, I always signify the fact by writing on the pocket, "From this specimen." This lends greater value to the plant in question. Sometimes one is obliged to take flowers from adjoining plants. In *Sagina procumbens* L., the pearlwort, my little press enables me to show clearly the minute petals, while my finest specimens of the flowers of the exquisite little *Arenaria Groenlandica* Spreng., the mountain sandwort, are those clapped into the baby press in a rain storm on the summit of Mt. Monadnock, N. H. Their wetting seemed to give them additional freshness, and the plants were so small that I put them into the little press entire.

I spent part of the summer of 1887 at York Harbor, Maine. My attention was naturally attracted especially to the seaside plants, and none interested me more than the eel grass, *Zostera marina* L. The inlets at the mouth of the York river were full of it, and the surface of the water was covered with the long ribbon-like leaves. The inflorescence is most beautifully adapted to the environment of the plant in the water. It must be seen in the fresh state to be appreciated. The narrow spadix, some two inches in length, is enclosed tightly in a delicate spathe, and at the time of flowering the ovaries thrust their exquisitely beautiful two-forked styles between the clasping edges of the spathe into the water, to receive from some other plant the pollen which has worked its way out from its home to assist in the great work of propagation. My baby press came to my aid in showing this inflorescence to the best advantage. I cut off a large number of the inflorescences and pressed them in various ways, with the spathe enclosing the spadix or opened so as to show the flowers in their natural position; I also drew the spadix out from the spathe, leaving it attached and allowing the spathe to close again. So now I have the plant complete, from rootstock to seed. One pocket contains drawings of the inflorescence, others contain the specimens made in my little press, and others still, the fruit collected at various places. I was even induced in this case to put specimens of the inflorescence into a small bottle of alcohol, and, as I look at them now, the ovaries are still vainly extending their finely forked style, as

when they left their briny home eight years ago, and the thread-like pollen is floating about, the whole telling the wonderful story of cross pollination in one of its thousand ways of adapting means to an end.

The most difficult task I ever gave my baby press was to prepare me a perfect diagram of the flower of a xyris. I think I may say that it is literally impossible to show the details of this flower in any other way. It is a poor withered blot in any pressed specimen of the plant. On August 9, 1888, I collected some fine specimens of *Xyris Caroliniana* Walt., the yellow-eyed grass, in Grassy Pond, Acton, Mass. The flowers were very beautiful as I gathered the plants. I had never realized that the xyris had a blossom with such exquisitely yellow petals. My herbarium showed nothing like it. Even when I put the specimen immediately into press, the hard scaly head allowed the blossom to wither. The operation of dissecting the flower was too delicate and too long a process to perform in the field, so I took home several flower heads in addition to my other specimens. I put them into a vase of water to get fresh blossoms in the morning. Sure enough when I visited them, a flower was slowly pushing its way up from behind its bract, and I saw, to my joy, that the flower was pushing ahead of it the anterior sepal which encloses the corolla, and falls as the blossom opens. How often had I read these words in the Gray Manual, "enwrapping the corolla in the bud and deciduous with it." Now I saw the performance for myself. As the flower opened, the sepal fell, and I caught it on the fly. Then, working under a lens, I dissected the flower and put into my baby press the three sepals, three petals with their inserted stamens, and the ovary with its three-cleft style. Attached to the base of the ovary are the three thread-like sterile filaments, beautifully cleft and bearded at the apex. I afterwards mounted them in diagrammatic form on a bit of white paper, and they are now in a pocket on one of my herbarium sheets, ready and anxious for inspection.

A pressed specimen of *Trapa natans* L., the water-chestnut, can hardly show the small white ephemeral flower in the center of the rosette of leaves. The press enabled me to do it, as I collected the plant on the Concord river in Concord, Mass. It is an introduction from Europe and has been in the river for years, thoroughly established and keeping company with *Marsilia quadrifolia* L., which is so abundant as to impede the oars as you row through it.

On a short visit to York Harbor, Maine, July 15, 1893, I took no press with me, for social duties made collecting out of the question. Walking along the cliffs with some friends, I noted the many plants about me, with the inward satisfaction that they were all duplicated in my herbarium. That feeling is always one of great gratification to me. Presently we reached a spot where we stopped to rest. It was close to the breaking waves and some ten feet above them, and as we sat down to enjoy the view, I noticed in the fine sand, which filled a shallow spot on the rock, some very small plants with purple flowers. The little fellows averaged an inch in height and covered the space of about a square yard. I confess that for a moment I was puzzled, for I did not expect to find such minute specimens of *Lythrum Hyssoipifolia* L., the loosestrife. "Starve a plant," said Dr. Asa Gray to me once, "and it will flower immediately." This was when I showed him some seedling *Bidens cernua* L., the bur marigold, flowering half an inch above the cotyledons. I gathered them floating on a pond. Starved they were most certainly, and so was my loosestrife in the sand. An improvised baby press secured for me plenty of specimens. Contrary to the ordinary description of the species the flowers were very conspicuous. Indeed it was this that attracted my attention. The little roots had worked their way down an inch or two into the sand in search of the much needed moisture. On the following Aug. 13th, I received from my friend, who was spending the summer at York Harbor, perfect fruiting specimens of the plant from the same spot. The fruit was well developed, though the plants had not increased in size a bit. Fortunately the rains had given them moisture enough to sustain life. In fact for several days the little plants were entirely under water. My herbarium specimens of this species show the plant to vary in height from six to twenty inches.

I do not tell these little incidents, so interesting to me, to claim any credit. Far from it. Perhaps many others do the same things too. It is open to all who will take the trouble, and if the account of what I am doing will stimulate any collector to do the same, I know that it will give added zest to his work, and will enrich his herbarium with material which he cannot get in any other way.

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